



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE PLAN PART I			
Name of the programme and specialization	B.Tech. (other than Electrical and Electronics Engineering)		
Course Title	POWER ELECTRONIC SYSTEMS		
Course Code	EEOE20	No. of Credits	03
Course Code of Pre-requisite subject(s)	-NA-		
Session	JULY 2023	Section	V, VII
Name of Faculty	Mrs. Elizabeth Paul	Department	EEE
Official Email	407322001@nitt.edu	Telephone No.	9496279976
Name of Course Coordinator(s)	-NA-		
Official E-mail	-NA-	Telephone No.	-NA-
Course Type	Elective course		
Syllabus (in BoS) approved			
<p>Power Semiconductor Devices –power diodes, power transistors, SCRs, TRIAC, GTO, power MOSFETs, IGBTs-Principle of operation, characteristics, ratings, protection, and gate drive circuits.</p> <p>Power Converters – AC to DC, AC to AC converters.</p> <p>PWM based Power Converters: DC to DC, DC to AC converters.</p> <p>Introduction to motor drives – Solid-state speed control of DC motor drive system.</p> <p>Solid-state speed control of induction motor drive system.</p> <p>Reference Books:</p> <ol style="list-style-type: none"> 1. Rashid, M.H, 'Power Electronics - Circuits, Devices and Applications', Prentice Hall Publications, 3rd Edition, 2003. 2. P.C Sen, 'Thyristor DC Drives', John Wiley and Sons, New York, 1991. 3. R. Krishnan, 'Electric Motor Drives – Modeling, Analysis and Control', Prentice-Hall of India Pvt. Ltd., New Delhi, 2003. 4. P.S. Bhimbra, 'Power Electronics', Khanna Publishers, 4th Edition, 2010. 			
COURSE OBJECTIVES			
To introduce characteristics of power electronic devices, design of various power converter circuits and speed control concepts of AC and DC drives.			



Course Outcomes (CO)

Upon completion of the course, the students will be able to

1. Identify various power electronic devices and plot their switching characteristics.
2. Design DC power conversion circuits for simple applications.
3. Analyze inverter and ac- ac converter circuits.
4. Perform speed control of dc and induction motors.

COURSE PLAN – PART II

COURSE TEACHING AND LEARNING ACTIVITIES

Sl. No.	Week/ Contact Hours	Topic	Mode of Delivery
1.	July 31 st (1 lecture)	Introduction	Chalk, talk and PPT
2	1 st week of August (2 lectures)	Power Semiconductor Devices – power diodes, power transistors	Chalk, talk and PPT
3	2 nd week of August (3 lectures)	TRIAC, GTO, power MOSFETs, IGBTs-Principle of operation, characteristics, ratings	Chalk, talk and PPT
4	3 rd week of August (3 lectures)	SCRs Principle of operation, characteristics, ratings, protection, and gate drive circuits.	Chalk, talk and PPT
5	4 th week of August (3 lectures)	Power Converters – AC to DC	Chalk, talk and PPT
6	2 nd week of September (3 lectures)	AC to AC converters	Chalk, talk and PPT
7	3 rd week of September (3 lectures)	PWM based Power Converters: DC to DC	Chalk, Talk and PPT
8	2 nd week of October (2 lectures)	DC to AC converters.	Chalk, Talk and PPT
9	3 rd week of October (1 lectures)	Introduction to motor drives – Solid- state speed control of DC motor drive system.	Chalk, Talk and PPT
10	4 th week of October (2 lectures)	Introduction to motor drives – Solid- state speed control of DC motor drive system.	Chalk, Talk and PPT



11	1 st week of November (2 lectures)	Solid-state speed control of induction motor drive system.	Chalk, Talk and PPT
12	2 nd week of November (2 lectures)	Solid-state speed control of induction motor drive system.	Chalk, Talk and PPT

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

Sl. No.	Mode of assessment	Week/Date	Duration	%Weightage
1.	Assessment -1 (First cycle test) (Module I and II)	1 st week of September 2023	1hr.	20%
2.	Assessment -2 (Second cycle test) (Module III and IV)	1 st week of October 2023	1hr.	20%
3	Assessment -3 (Assignment /Quiz)	Oct 30 th – Nov 3 rd 2023		20%
	Compensation test (First four modules)	Nov 6 th - 10 th 2023	1hr.	20%
4.	Assessment End Semester	1 st week of December 2023 (tentative)	3hrs.	40%

COURSE EXIT SURVEY

COURSE POLICY (including compensation assessment to be specified)

- All students are advised to check their NITT webmail regularly. All the correspondence (schedule of classes/schedule of assessment/ lab material/ any other information regarding course) will be done through their webmail only.
- If any student is not able to attend any of the continuous assessment due to genuine reason, is permitted to attend the compensation test with percentage weightage equal to the maximum of the CAs.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- At least 75% attendance in each course is mandatory.
- A maximum of 10% shall be allowed under On Duty (OD) category.
- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.



ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programme.

ADDITIONAL INFORMATION, IF ANY

- The faculty is available for consultation at times as per the intimation given by the faculty.
- Queries may also be emailed to the faculty directly to 407322001@nitt.edu

FOR APPROVAL

Course Faculty

HOD 08/08/23